MAY 1 4 2004
PATENT & TRADEMARK OFFICE 600

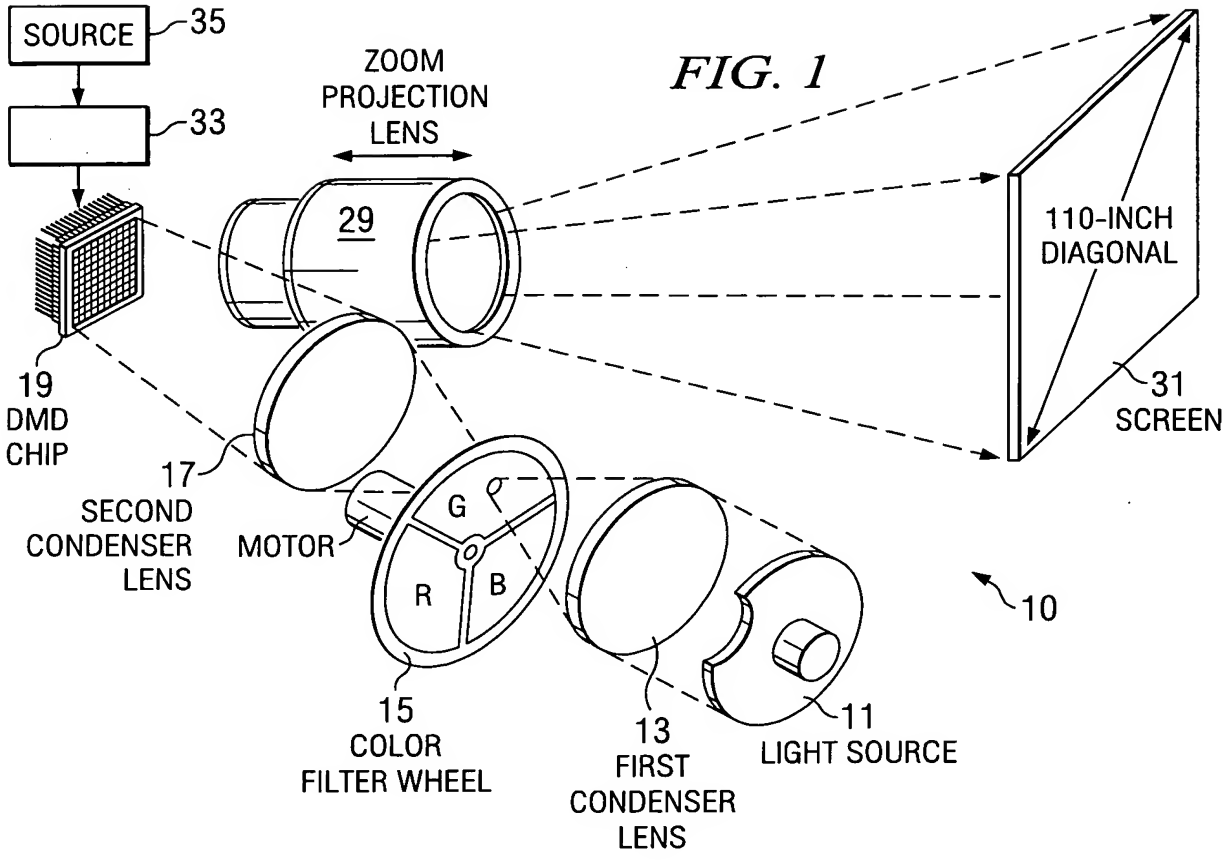


FIG. 1

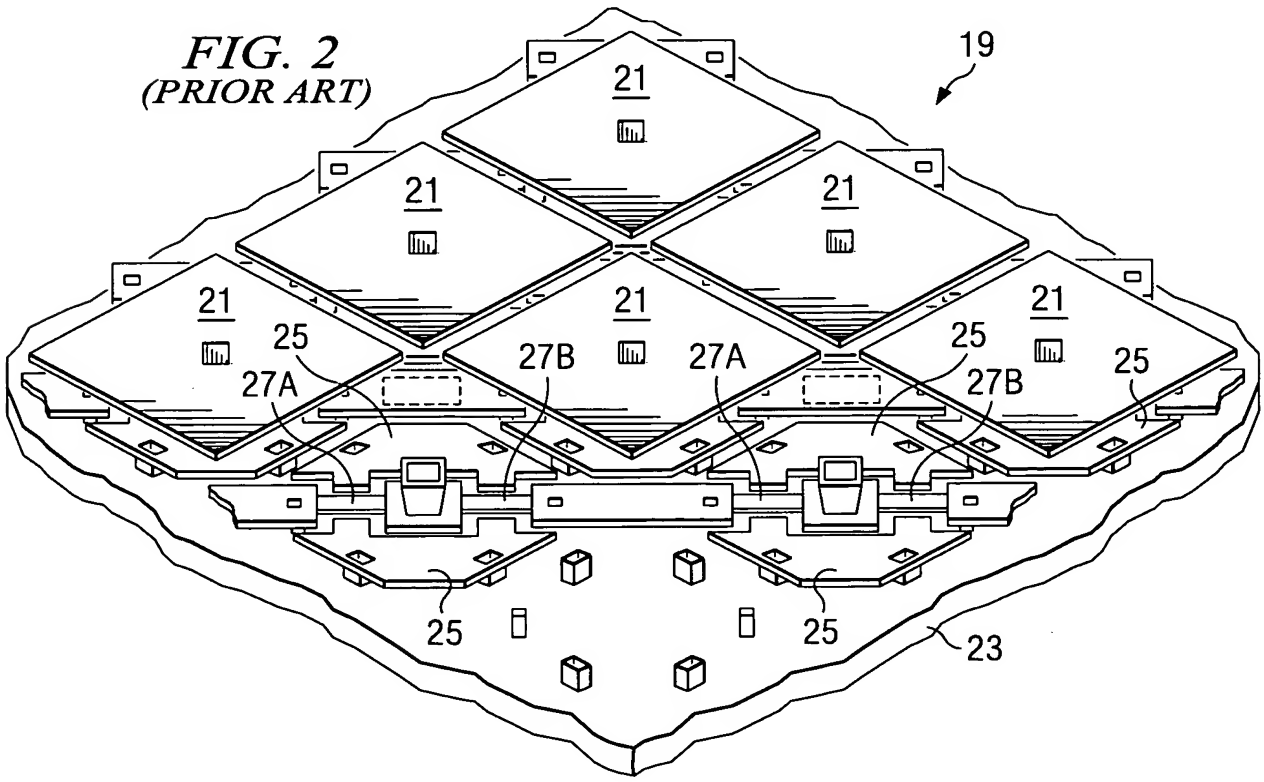


FIG. 2
(PRIOR ART)

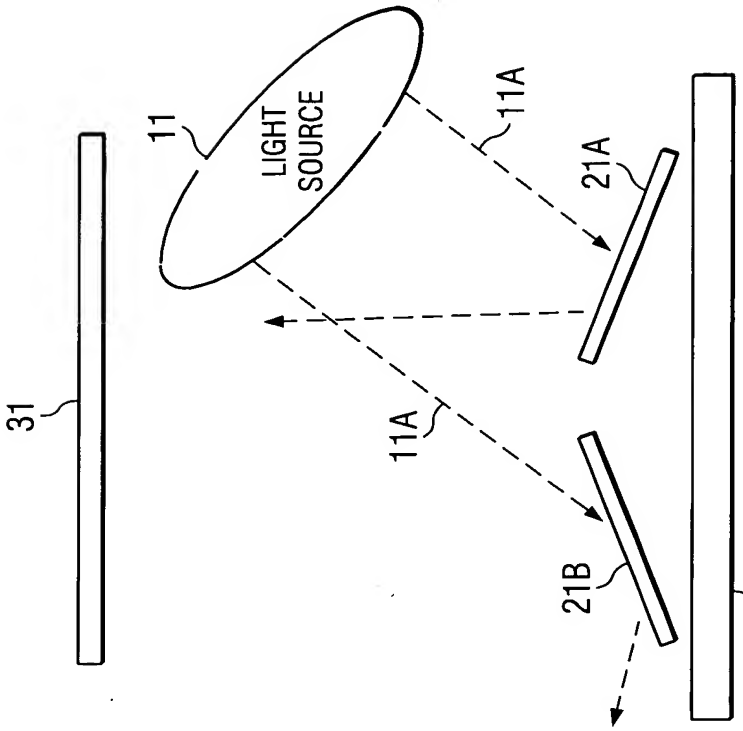
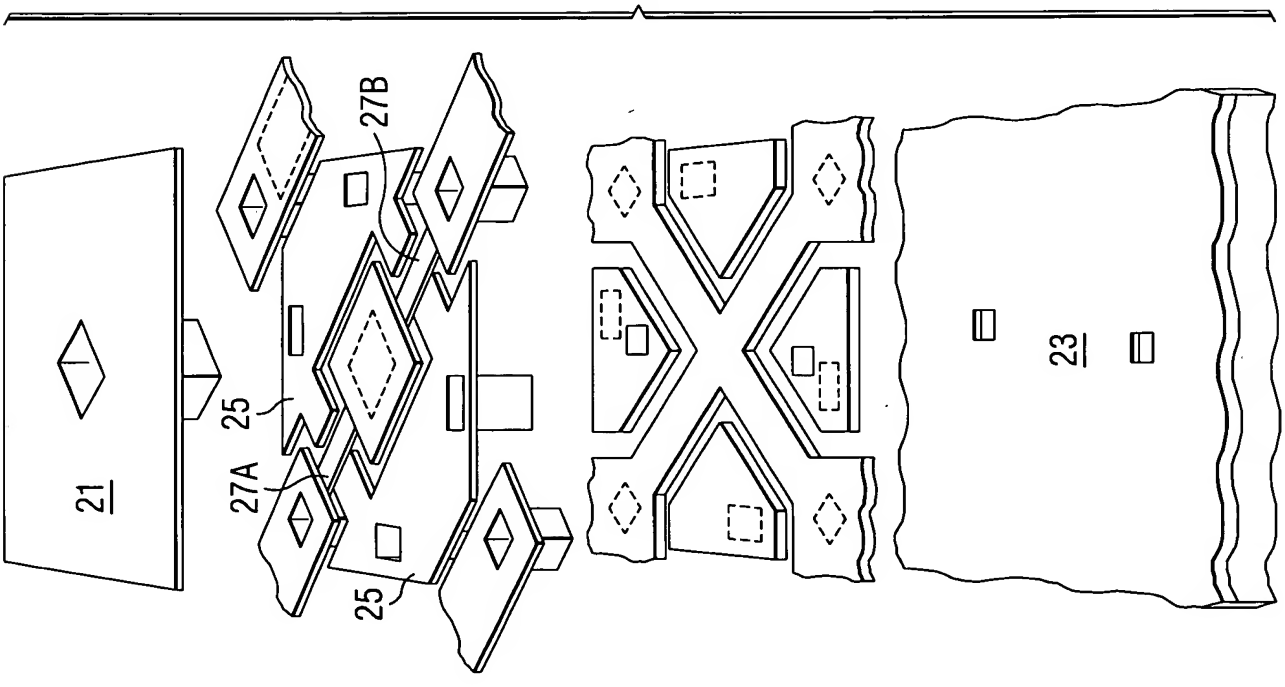


FIG. 4
(PRIOR ART)

FIG. 3



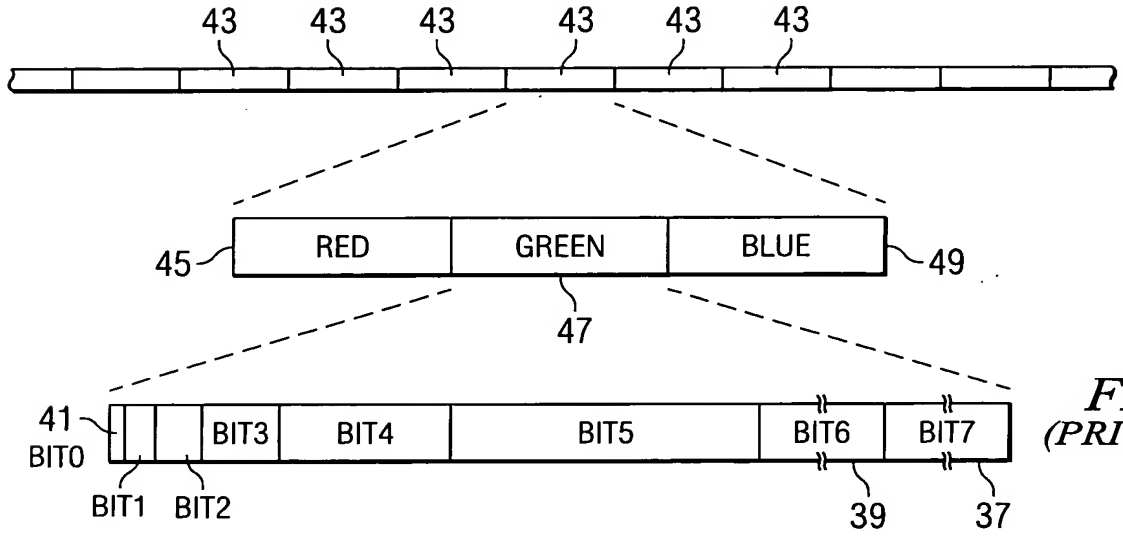


FIG. 5
(PRIOR ART)

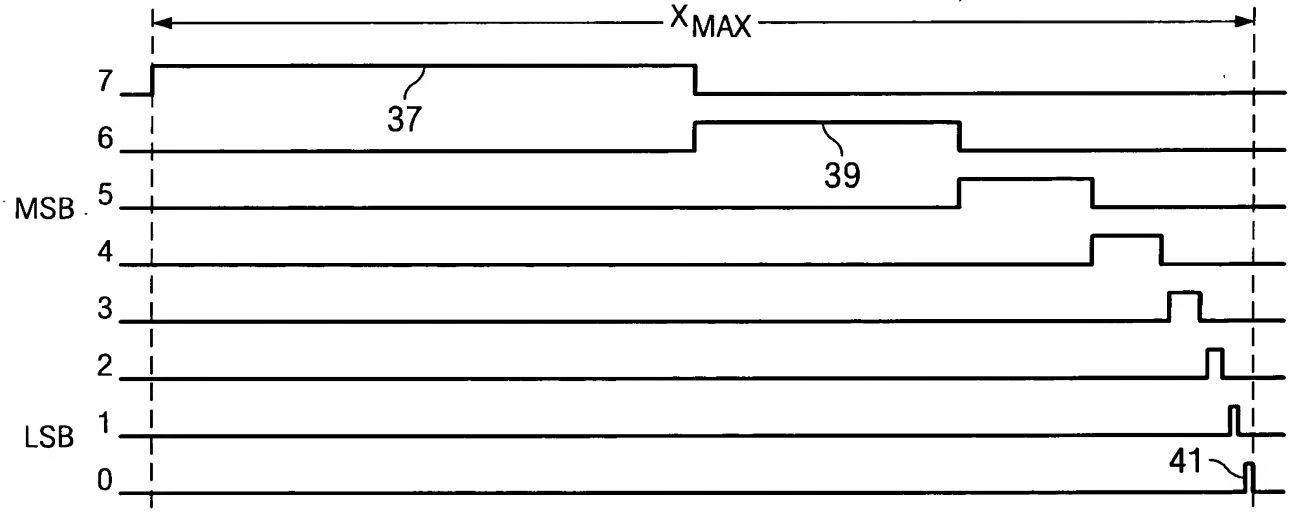


FIG. 6

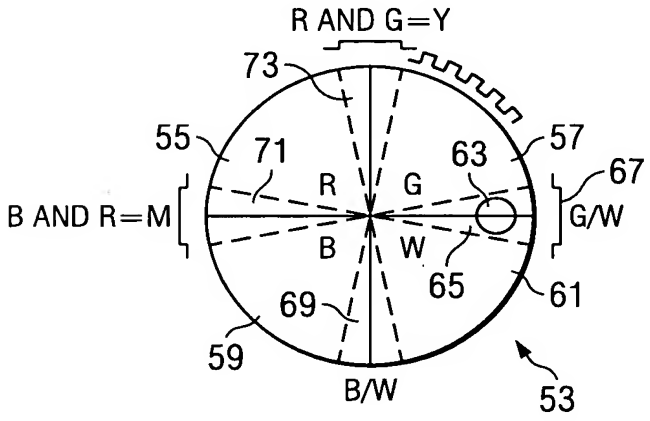


FIG. 7A

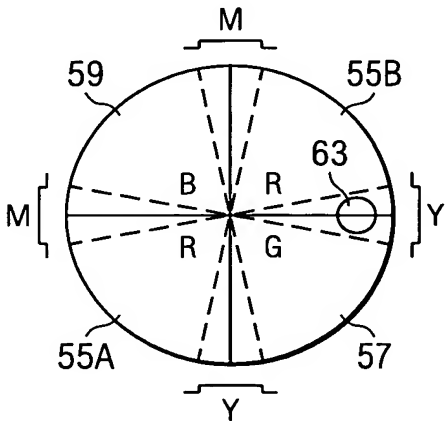


FIG. 7B

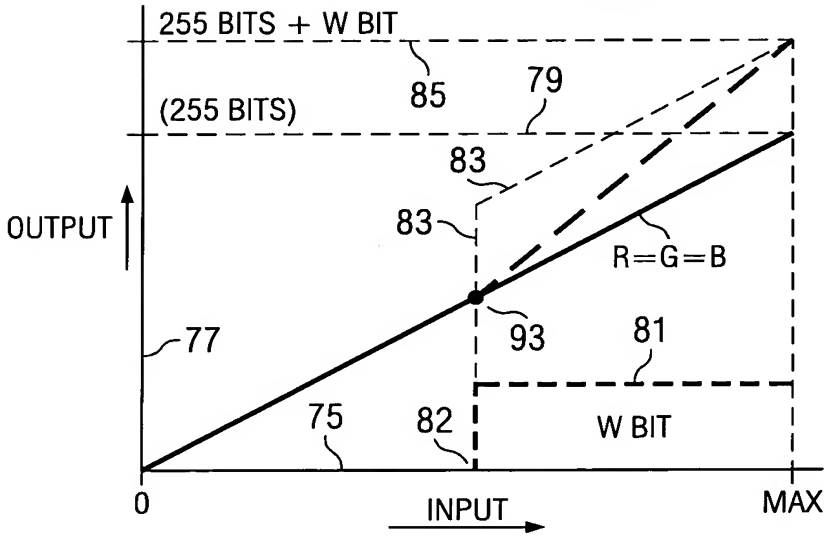


FIG. 8

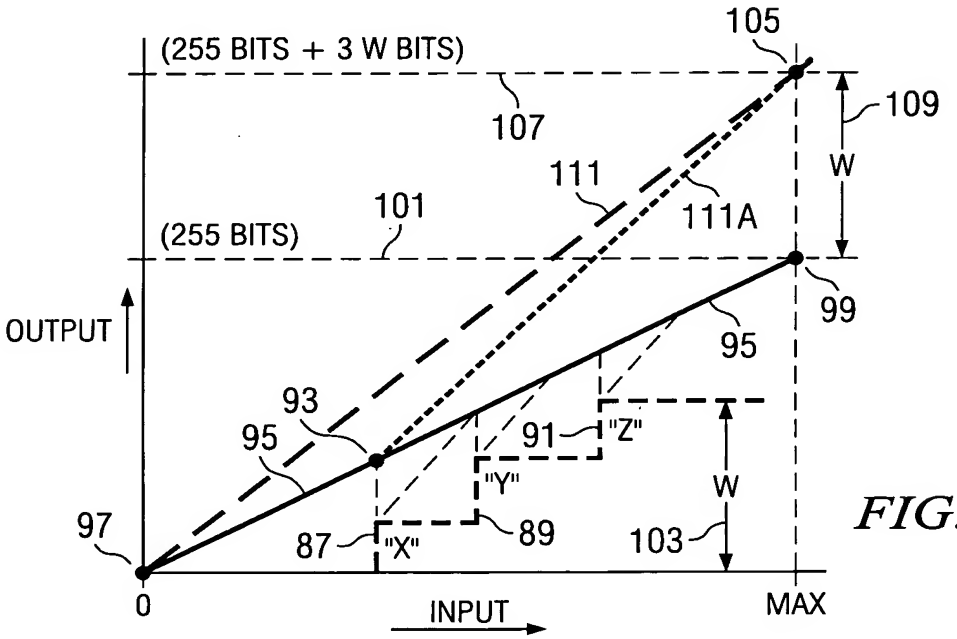


FIG. 9

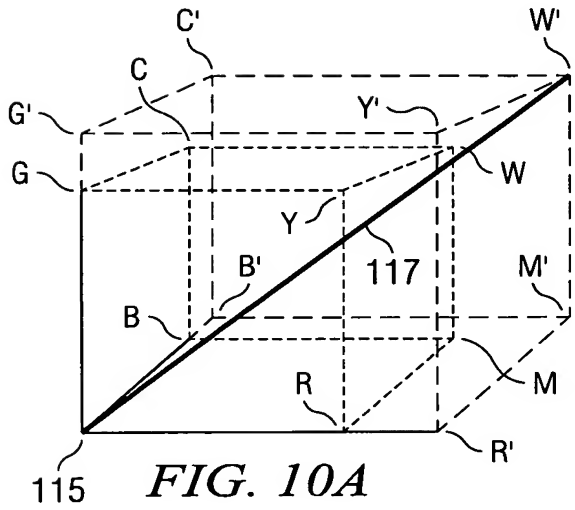


FIG. 10A

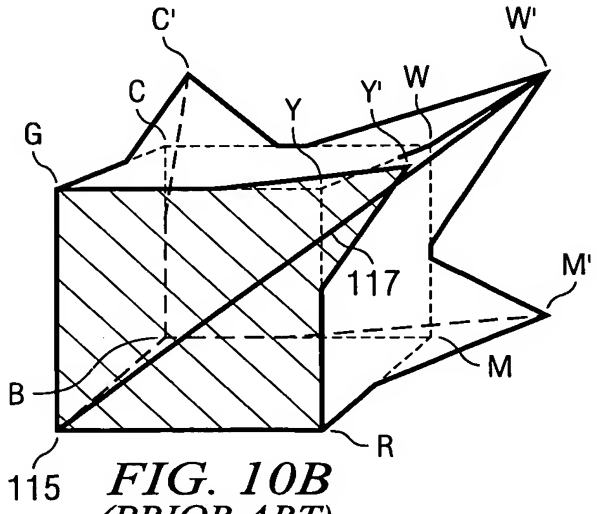


FIG. 10B
(PRIOR ART)

FIG. 11

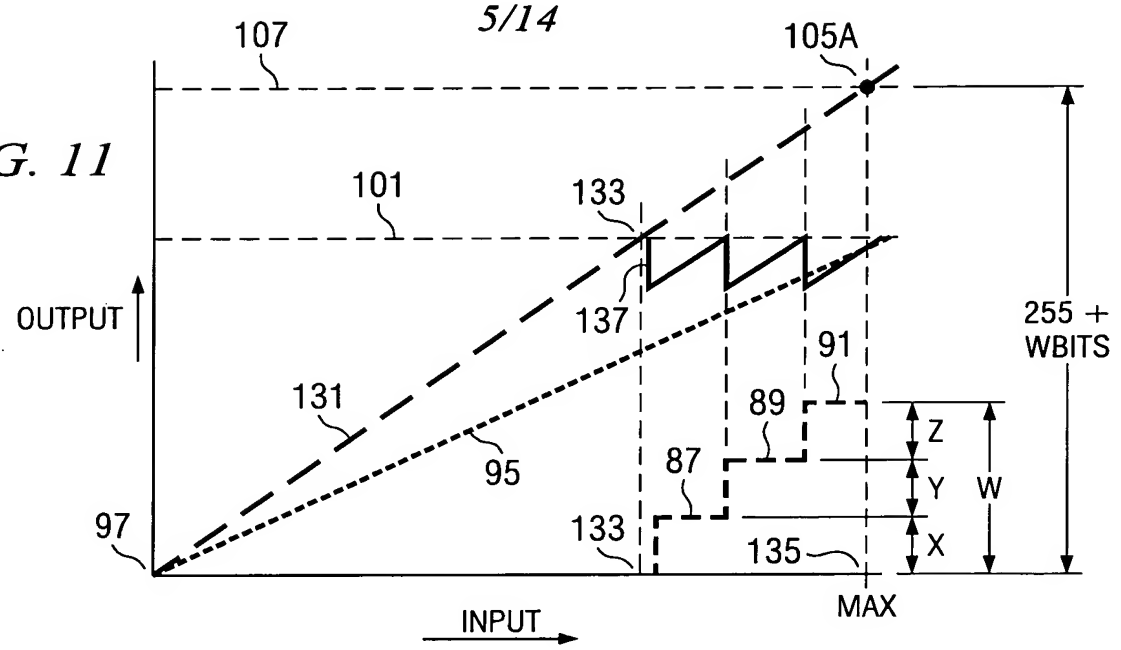


FIG. 12

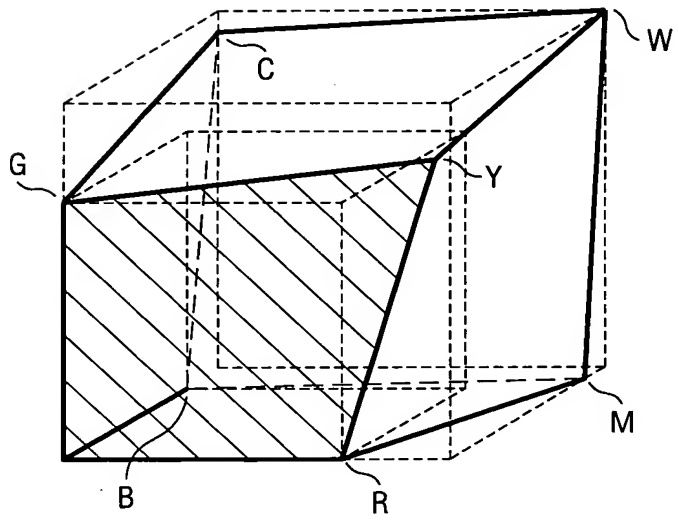


FIG. 13B

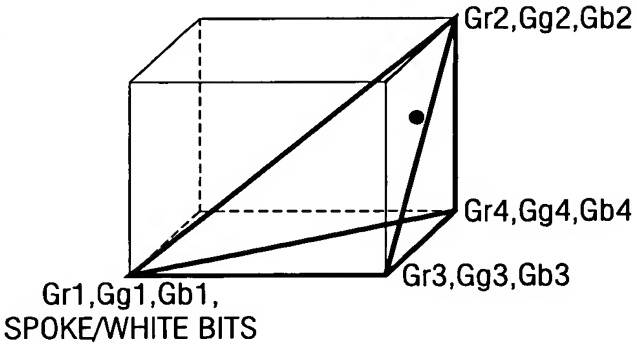


FIG. 15

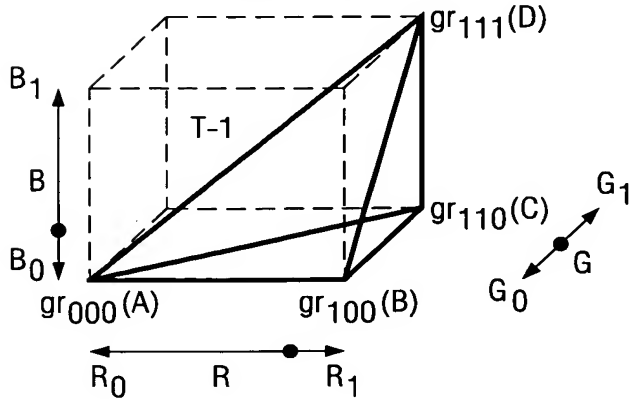


FIG. 13A

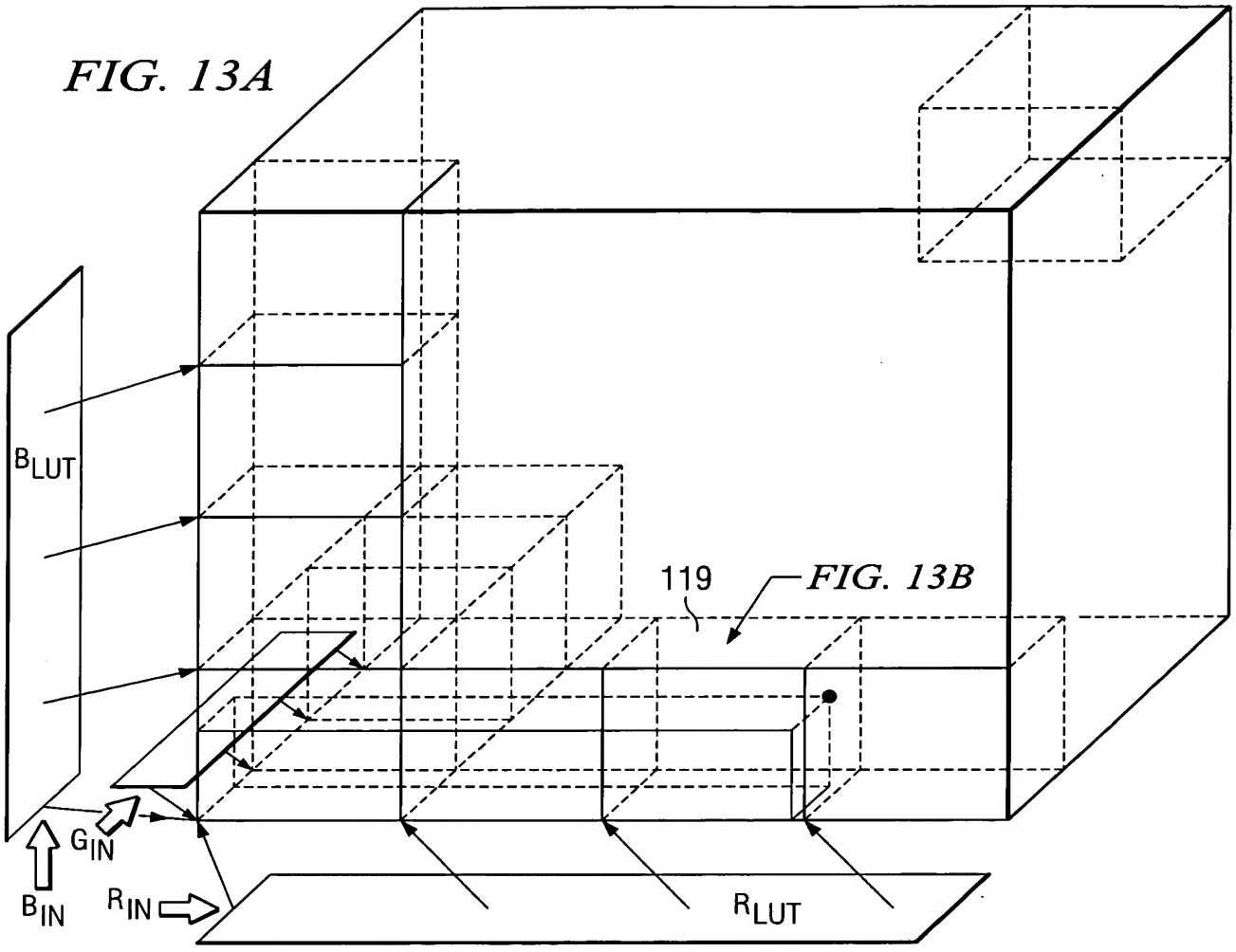


FIG. 14

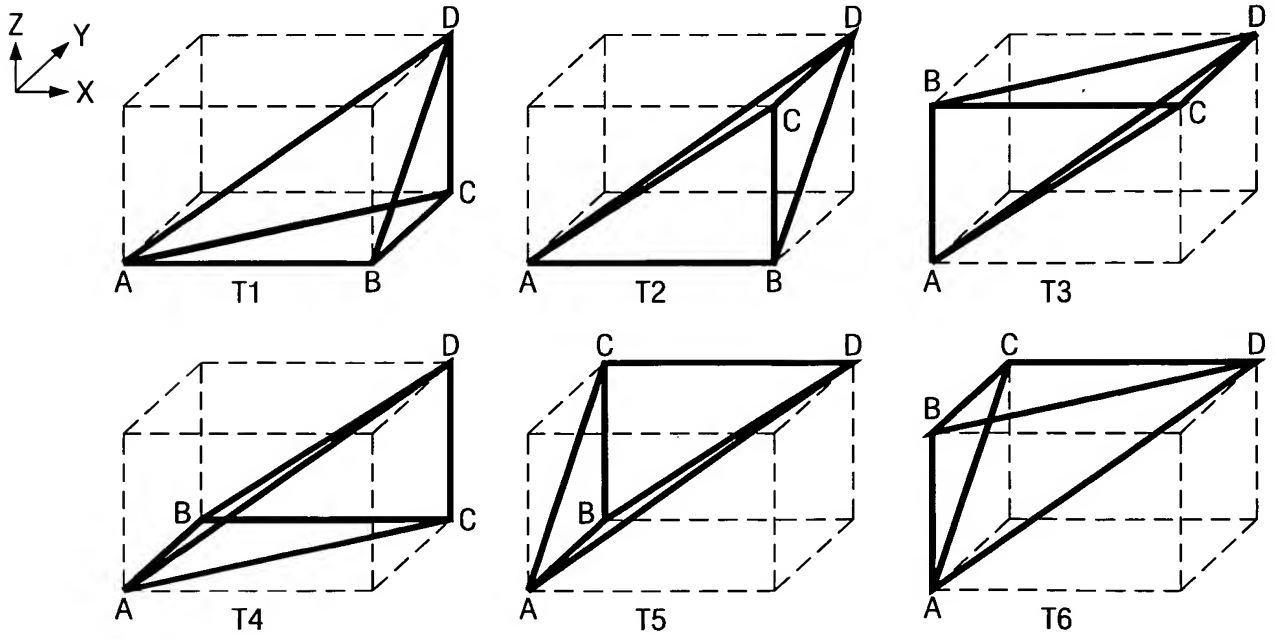
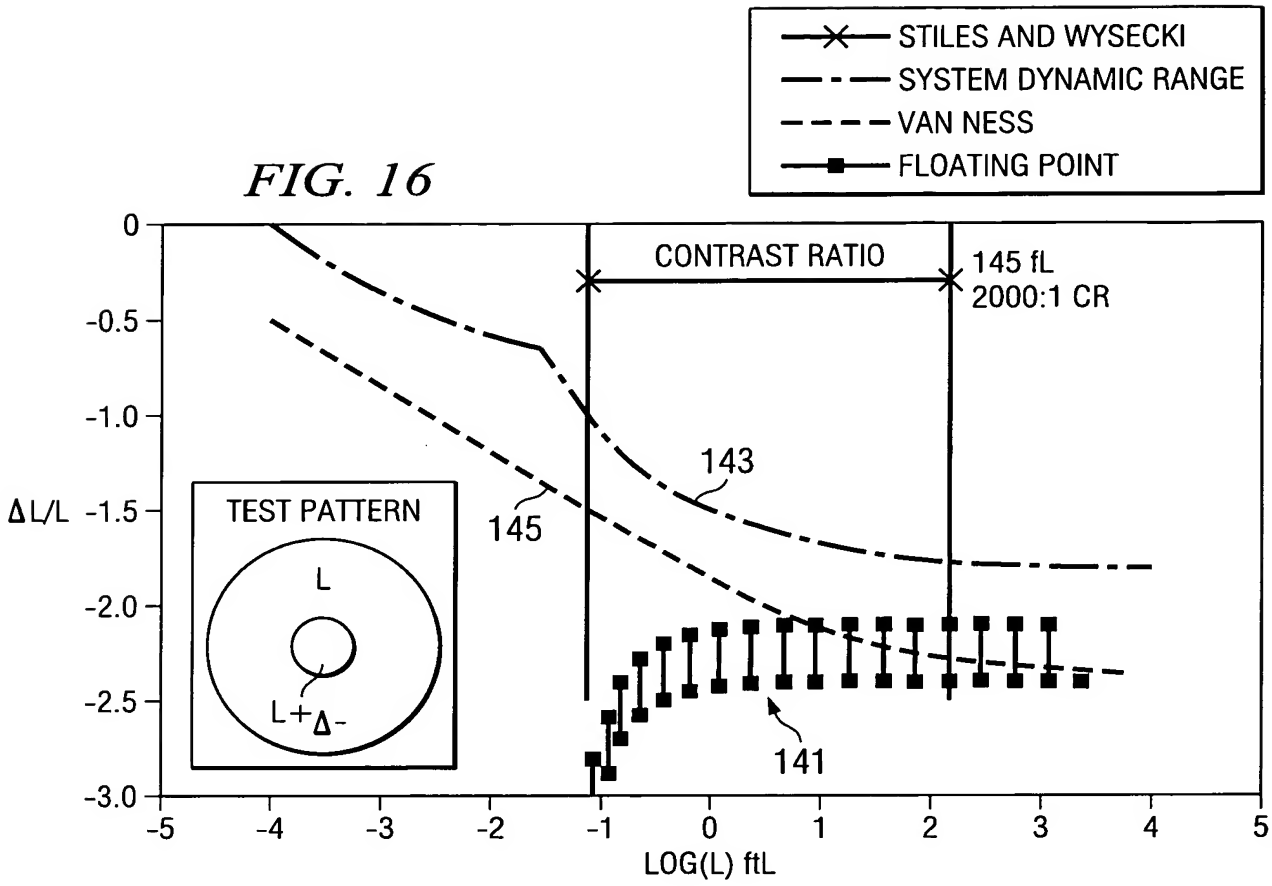


FIG. 16


STILES AND WYSECKI
SYSTEM DYNAMIC RANGE
VAN NESS
FLOATING POINT
CONTRAST RATIO
145 fL
2000:1 CR
143
145
141
TEST PATTERN
L
L+Δ-
ΔL/L
0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-5
-4
-3
-2
-1
0
1
2
3
4
5
LOG(L) ftL

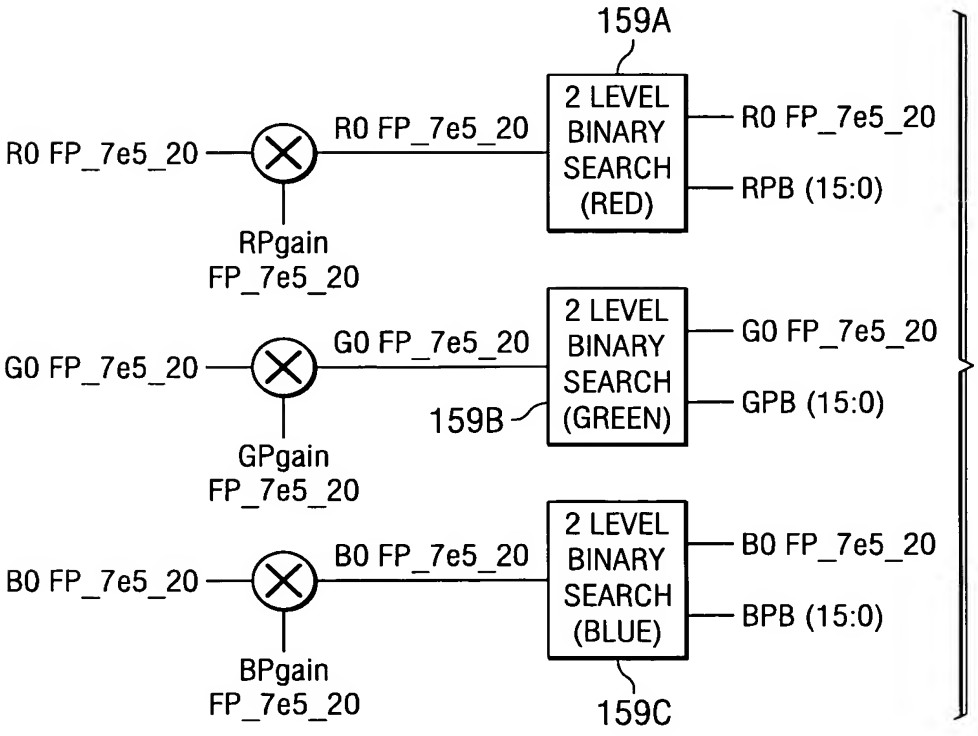

159A
2 LEVEL BINARY SEARCH (RED)
R0 FP_7e5_20
R0 FP_7e5_20
RPB (15:0)
RPgain FP_7e5_20
2 LEVEL BINARY SEARCH (GREEN)
G0 FP_7e5_20
G0 FP_7e5_20
GPB (15:0)
159B
GPgain FP_7e5_20
2 LEVEL BINARY SEARCH (BLUE)
B0 FP_7e5_20
B0 FP_7e5_20
BPB (15:0)
BPgain FP_7e5_20
159C

FIG. 18

FIG. 17

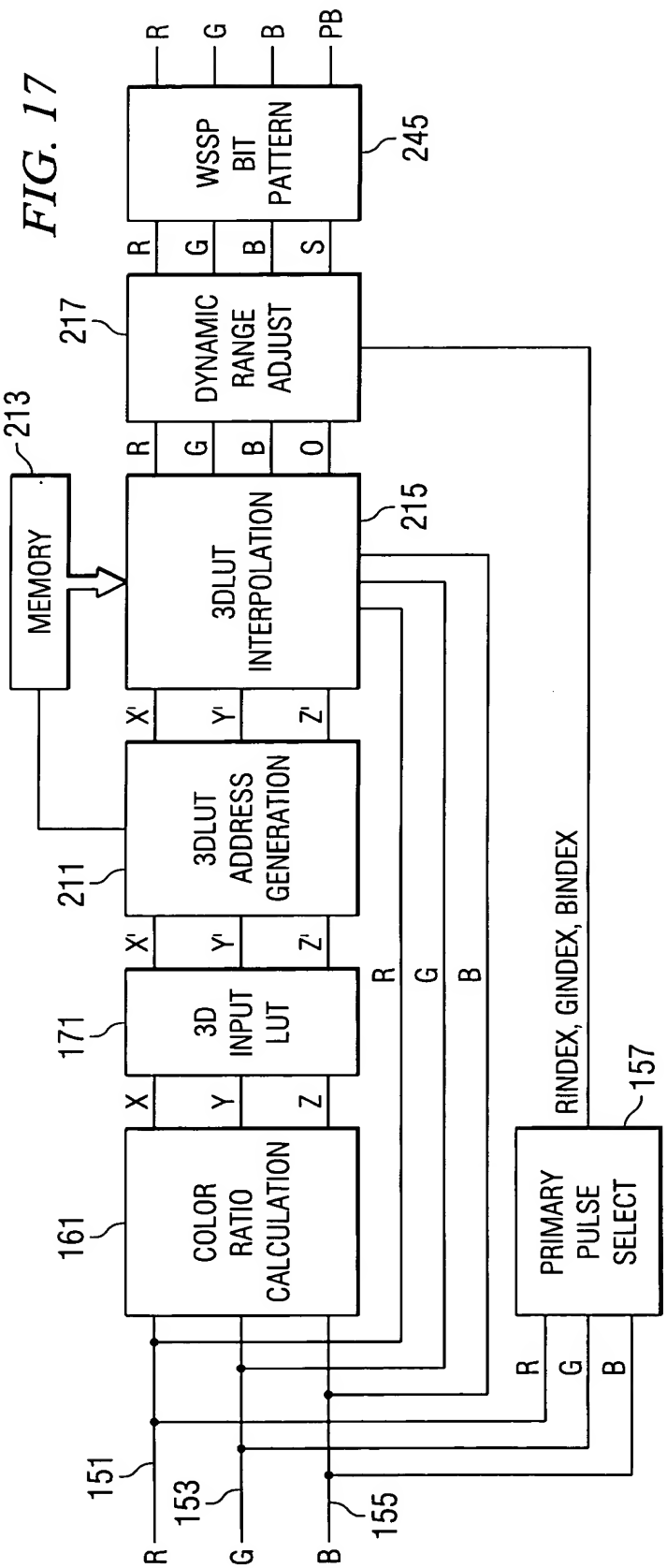


FIG. 21

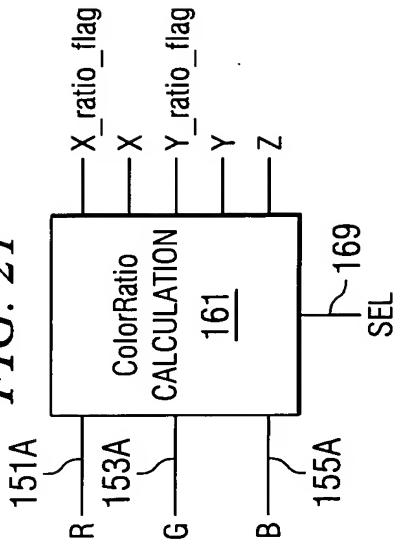
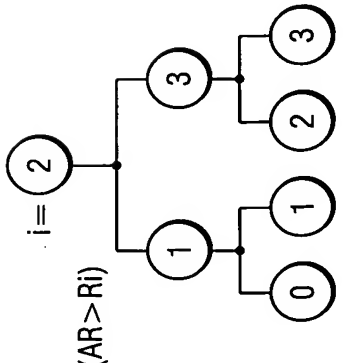


FIG. 19



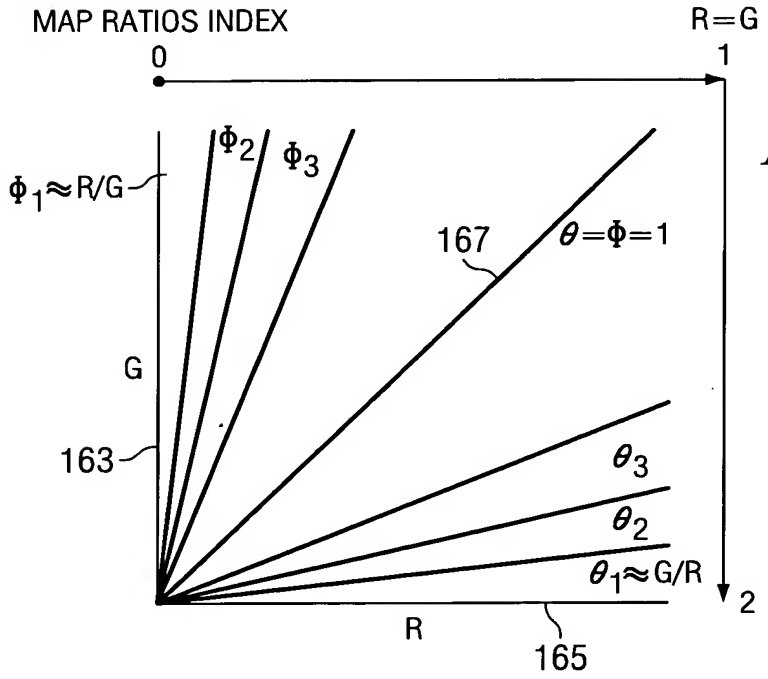

MAP RATIOS INDEX
0
R=G
1
Φ_2
Φ_3
$\Phi_1 \approx R/G$
167
$\theta=\Phi=1$
G
163
θ_3
θ_2
$\theta_1 \approx G/R$
2
R
165

FIG. 20

FIG. 22

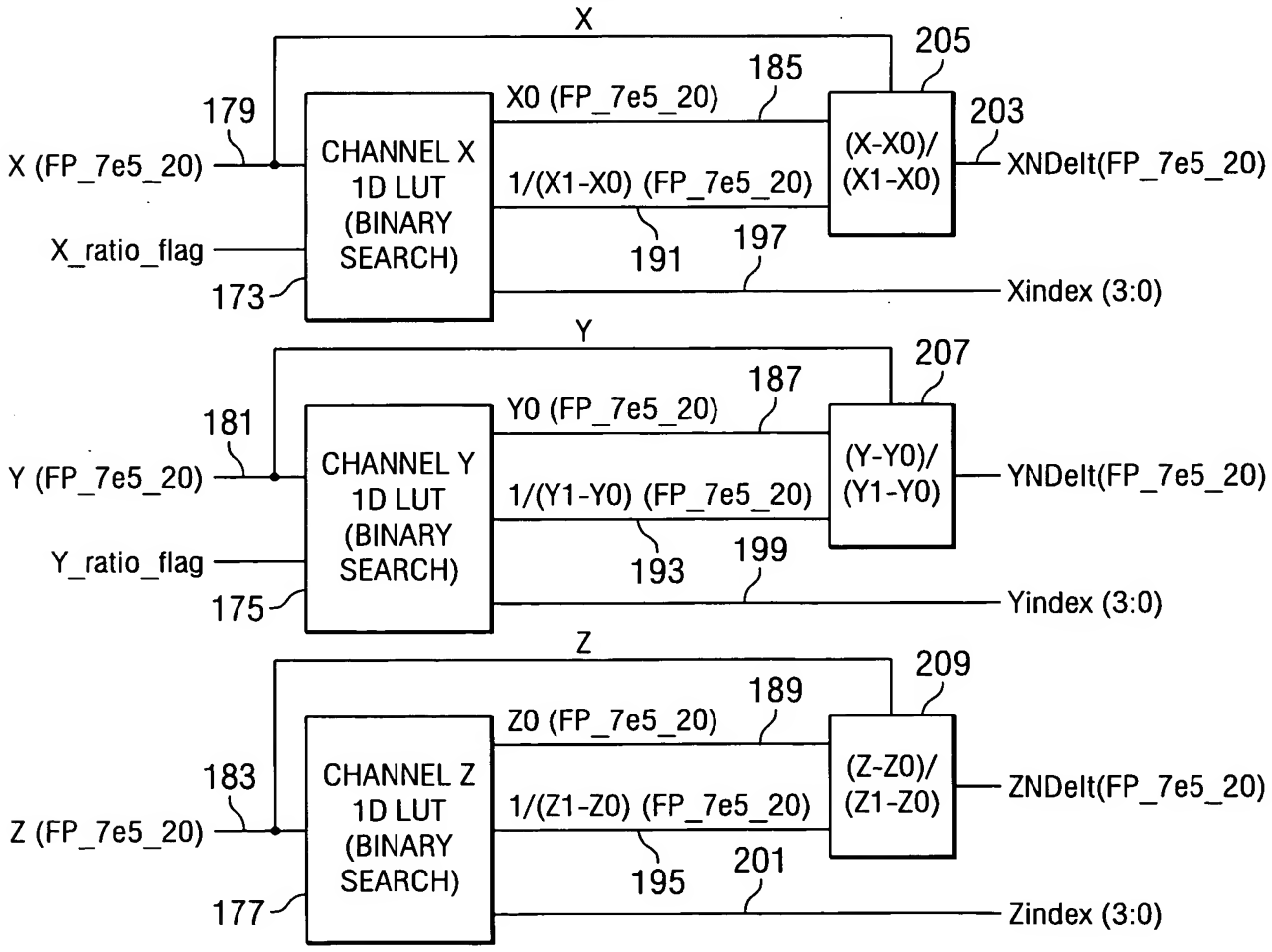

X
205
185
179
X0 (FP_7e5_20)
203
X (FP_7e5_20)
CHANNEL X 1D LUT (BINARY SEARCH)
1/(X1-X0) (FP_7e5_20)
(X-X0)/ (X1-X0)
XNDelt(FP_7e5_20)
X_ratio_flag
191
197
173
Xindex (3:0)
Y
207
187
181
Y0 (FP_7e5_20)
Y (FP_7e5_20)
CHANNEL Y 1D LUT (BINARY SEARCH)
1/(Y1-Y0) (FP_7e5_20)
(Y-Y0)/ (Y1-Y0)
YNDelt(FP_7e5_20)
Y_ratio_flag
193
199
175
Yindex (3:0)
Z
209
189
183
Z0 (FP_7e5_20)
Z (FP_7e5_20)
CHANNEL Z 1D LUT (BINARY SEARCH)
1/(Z1-Z0) (FP_7e5_20)
(Z-Z0)/ (Z1-Z0)
ZNDelt(FP_7e5_20)
195
201
177
Zindex (3:0)

FIG. 23

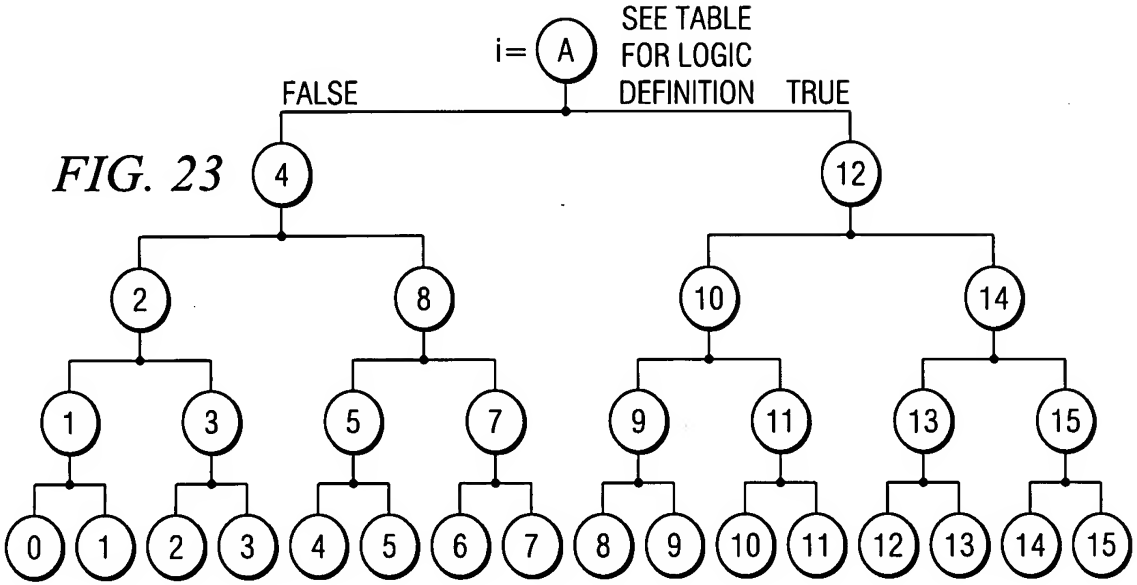


FIG. 28

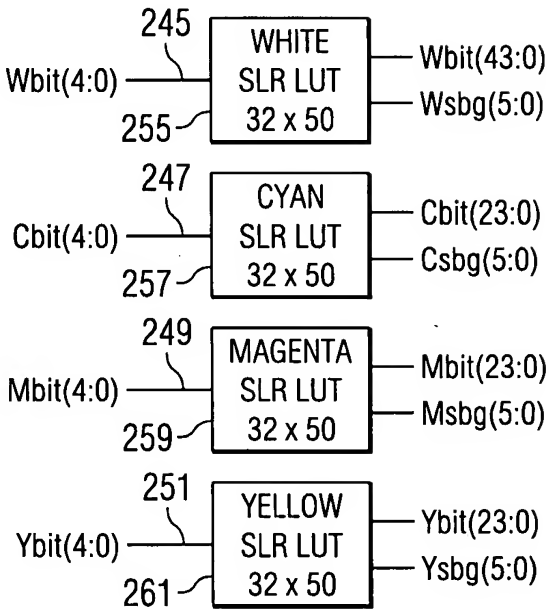


FIG. 26

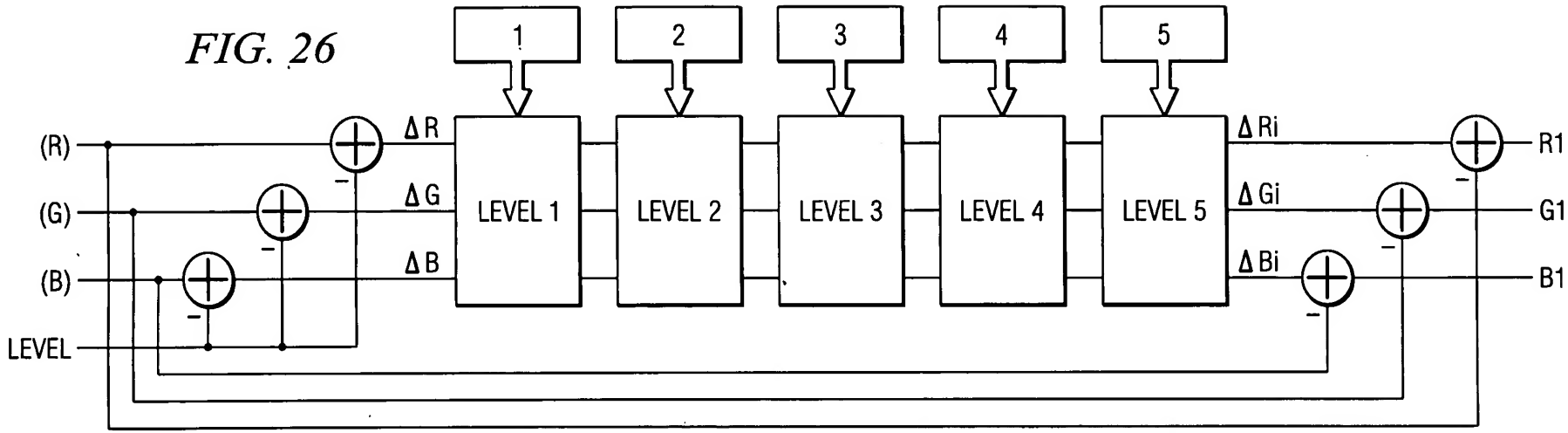
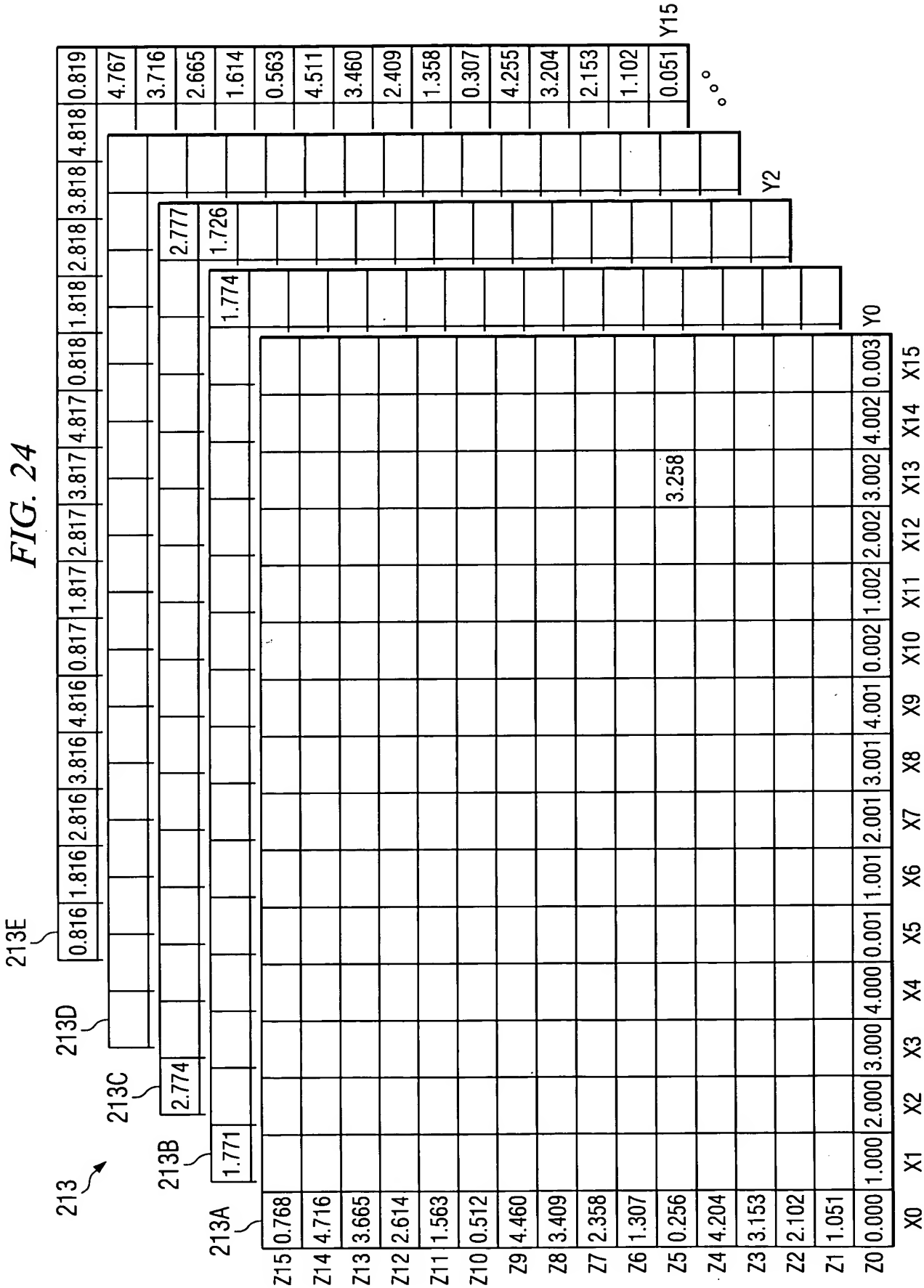


FIG. 24


213
213A
213B
213C
213D
213E
Z15 0.768
Z14 4.716
Z13 3.665
Z12 2.614
Z11 1.563
Z10 0.512
Z9 4.460
Z8 3.409
Z7 2.358
Z6 1.307
Z5 0.256
Z4 4.204
Z3 3.153
Z2 2.102
Z1 1.051
Z0 0.000 1.000 2.000 3.000 4.000 0.001 1.001 2.001 3.001 4.001 0.002 1.002 2.002 3.002 4.002 0.003
X0 X1 X2 X3 X4 X5 X6 X7 X8 X9 X10 X11 X12 X13 X14 X15
Y0
Y2
Y15
1.771
2.774
1.774
2.777
1.726
0.816 1.816 2.816 3.816 4.816 0.817 1.817 2.817 3.817 4.817 0.818 1.818 2.818 3.818 4.818 0.819
4.767
3.716
2.665
1.614
0.563
4.511
3.460
2.409
1.358
0.307
4.255
3.204
2.153
1.102
0.051
3.258

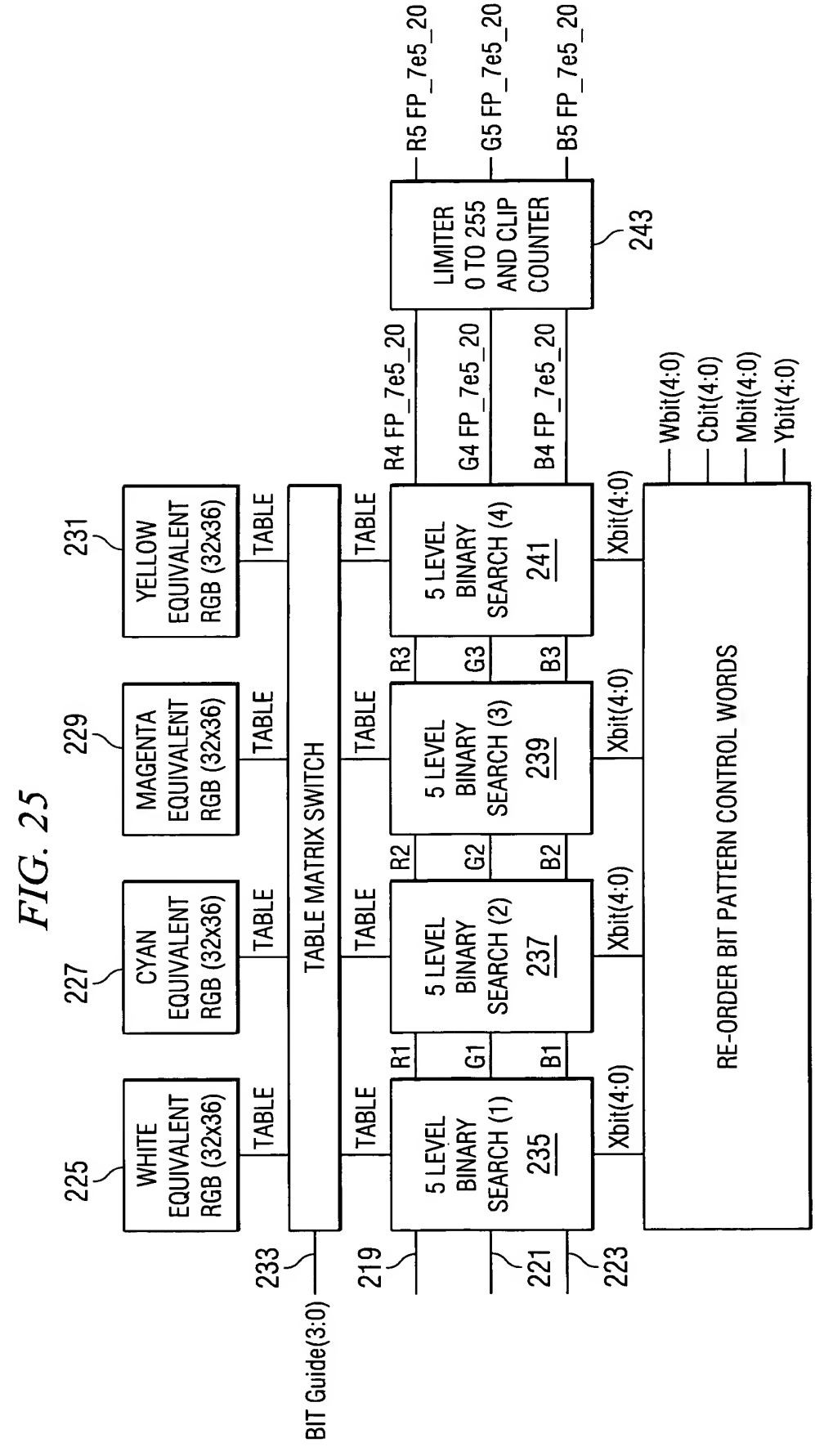

BIT Guide(3:0)
233
219
221
223
225
WHITE EQUIVALENT RGB (32x36)
227
CYAN EQUIVALENT RGB (32x36)
229
MAGENTA EQUIVALENT RGB (32x36)
231
YELLOW EQUIVALENT RGB (32x36)
TABLE
TABLE MATRIX SWITCH
5 LEVEL BINARY SEARCH (1) 235
5 LEVEL BINARY SEARCH (2) 237
5 LEVEL BINARY SEARCH (3) 239
5 LEVEL BINARY SEARCH (4) 241
R1
G1
B1
R2
G2
B2
R3
G3
B3
Xbit(4:0)
RE-ORDER BIT PATTERN CONTROL WORDS
Wbit(4:0)
Cbit(4:0)
Mbit(4:0)
Ybit(4:0)
R4 FP_7e5_20
G4 FP_7e5_20
B4 FP_7e5_20
LIMITER 0 TO 255 AND CLIP COUNTER
243
R5 FP_7e5_20
G5 FP_7e5_20
B5 FP_7e5_20

FIG. 25

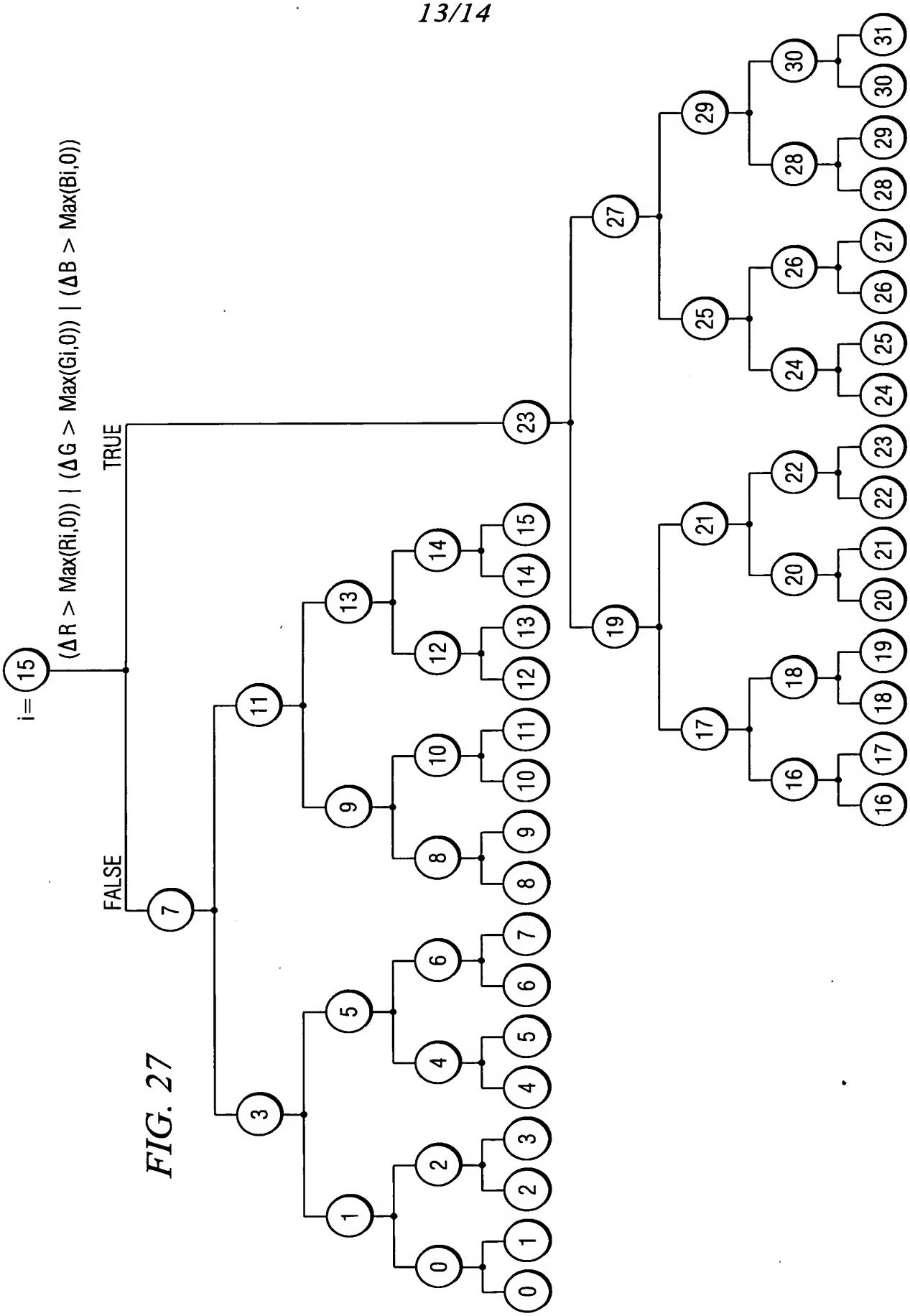
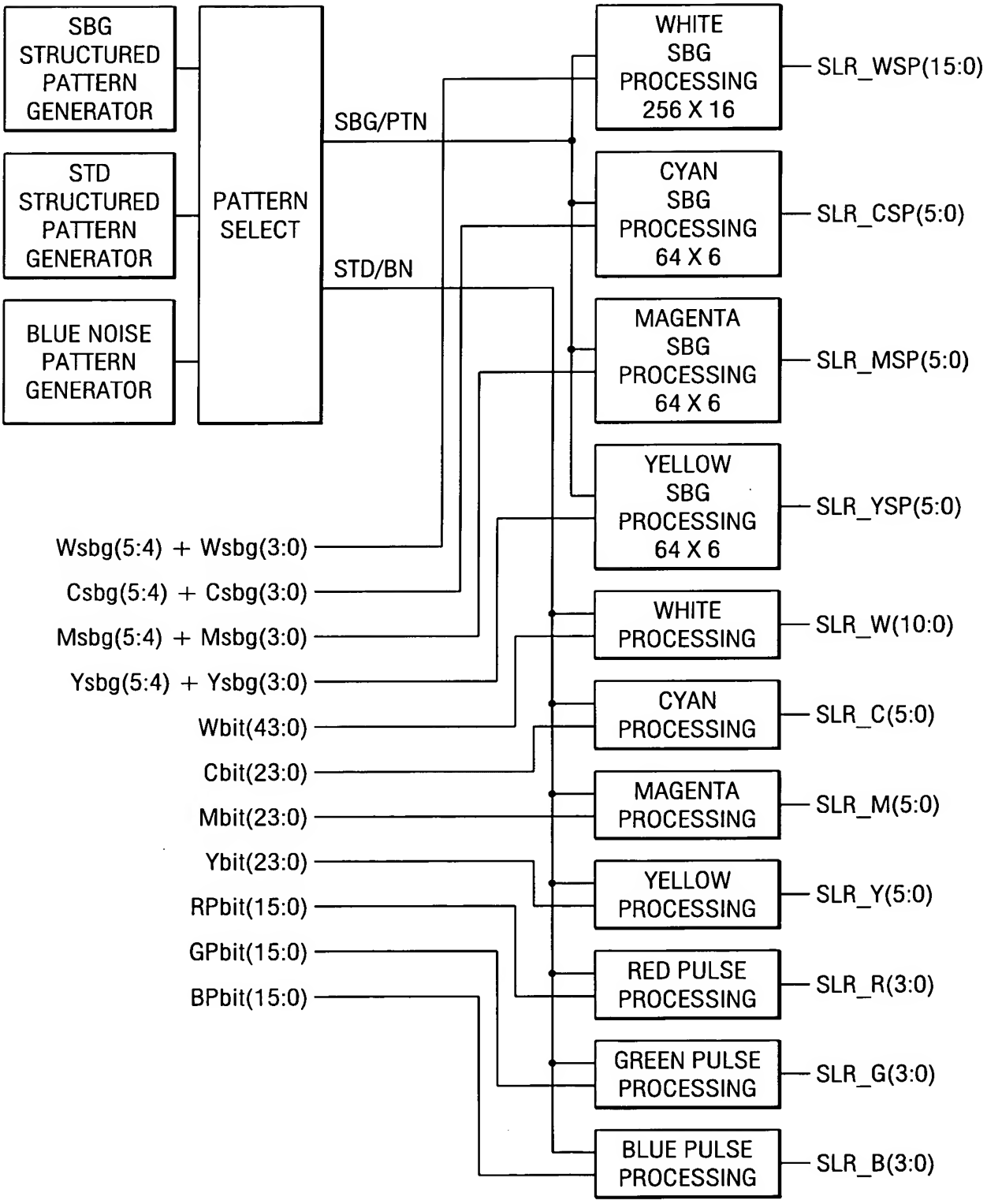

i= 15
(ΔR > Max(Ri,0)) | (ΔG > Max(Gi,0)) | (ΔB > Max(Bi,0))
TRUE
FALSE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

FIG. 27

FIG. 29


SBG STRUCTURED PATTERN GENERATOR
STD STRUCTURED PATTERN GENERATOR
BLUE NOISE PATTERN GENERATOR
PATTERN SELECT
SBG/PTN
STD/BN
Wsbg(5:4) + Wsbg(3:0)
Csbg(5:4) + Csbg(3:0)
Msbg(5:4) + Msbg(3:0)
Ysbg(5:4) + Ysbg(3:0)
Wbit(43:0)
Cbit(23:0)
Mbit(23:0)
Ybit(23:0)
RPbit(15:0)
GPbit(15:0)
BPbit(15:0)
WHITE SBG PROCESSING 256 X 16
SLR_WSP(15:0)
CYAN SBG PROCESSING 64 X 6
SLR_CSP(5:0)
MAGENTA SBG PROCESSING 64 X 6
SLR_MSP(5:0)
YELLOW SBG PROCESSING 64 X 6
SLR_YSP(5:0)
WHITE PROCESSING
SLR_W(10:0)
CYAN PROCESSING
SLR_C(5:0)
MAGENTA PROCESSING
SLR_M(5:0)
YELLOW PROCESSING
SLR_Y(5:0)
RED PULSE PROCESSING
SLR_R(3:0)
GREEN PULSE PROCESSING
SLR_G(3:0)
BLUE PULSE PROCESSING
SLR_B(3:0)